

SERVICE MANUAL

CD MECHANISM

BASIC CD MECHANISM :KSM2131FAM

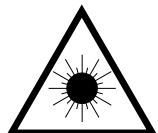
TYPE	BASIC CD MECHANISM
ZD4NC	KSM-2131FAM
YZD4NC	KSM-2131FAM
ZD4N	KSM-2131FAM
YZD4NCC	KSM-2131FAM

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

WARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION

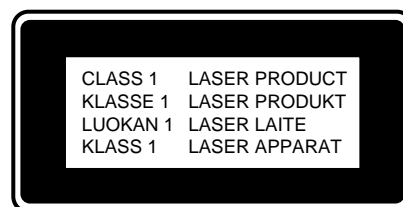
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.

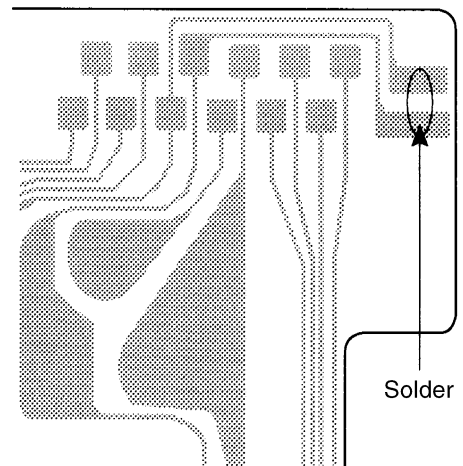


Precaution to replace Optical block (KSS-213F)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

- 1) After the connection, remove solder shown in the right figure.

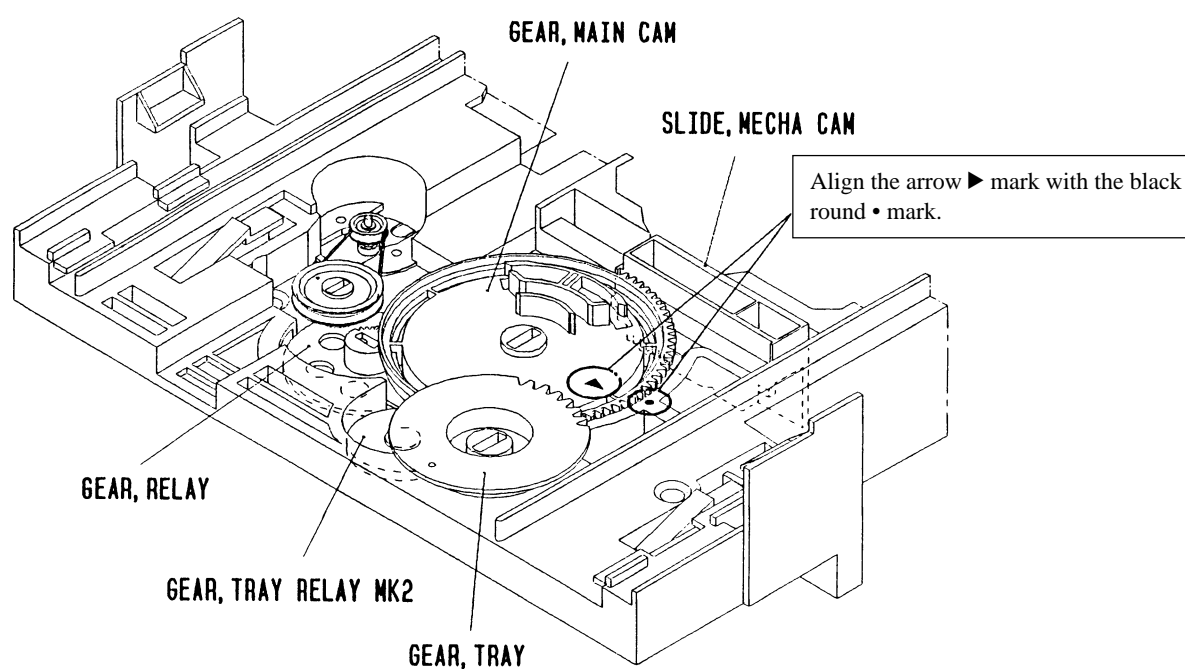
PICK-UP Assy PWB



How to Adjust the Rotating Phase of the Gear, Main Cam

- 1) Push down the hooking catch of the CHAS. MECH, and remove the TRAY.
- 2) Align the arrow mark of the Gear, Main Cam with the black round mark of the CHAS, MECHA as shown below.
- 3) Confirm that the Slide, Mech Cam is located in the right position, then insert the TRAY gently.

Caution: If the rotating phase of the Gear, Main Cam is incorrectly adjusted, the chucking operation and tray movement will have malfunction.



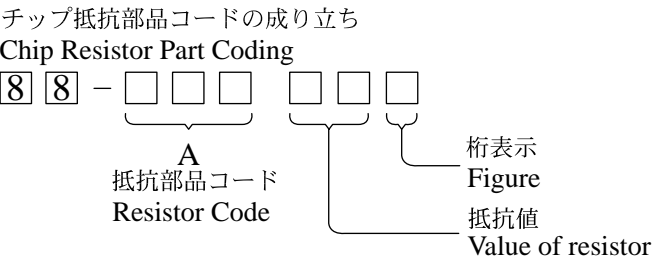
ELECTRICAL MAIN PARTS LIST-1/2

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C135	87-010-260-080		CAP, ELECT 47-25V
	87-A21-821-030	C-IC,LC78645E		C136	87-010-759-080		C-CAP,U, 0.1-25F
	87-A21-414-010	IC,BA5927S		C137	87-A10-915-080		C-CAP,U 1000P-25 J CH
TRANSISTOR				C138	87-010-759-080		C-CAP,U, 0.1-25F
	87-026-609-080	TR,KTA1266GR		C160	87-016-669-080		C-CAP,S 0.1-25 K B
	87-026-610-080	TR,KTC3198GR		C161	87-A10-484-080		C-CAP,S 1.0U-10 K B
	87-A30-073-080	C-TR,RT1N 141C		C203	87-010-112-080		CAP, ELECT 100-16V
	87-A30-076-080	C-TR,2SC3052F		C204	87-010-759-080		C-CAP,U, 0.1-25F
	87-A30-515-080	TR,2SA19790/Y		C205	87-010-263-040		CAP,E 100-10
DIODE				C208	87-010-759-080		C-CAP,U, 0.1-25F
	87-A40-743-080	ZENER,UZ4.3BSA		C212	87-010-405-040		CAP,E 10-50
	87-A40-747-080	ZENER,UZ5.1BSB		C213	87-010-759-080		C-CAP,U, 0.1-25F
	87-A40-270-080	C-DIODE,MC2838		C214	87-010-759-080		C-CAP,U, 0.1-25F
	87-A40-753-080	ZENER,UZ6.8BSB		C301	87-010-382-080		CAP, ELECT 22-25V
	87-020-465-080	DIODE,1SS133 (110MA)		C302	87-010-759-080		C-CAP,U, 0.1-25F
MAIN C.B				C303	87-010-260-080		CAP, ELECT 47-25V
C1	87-010-759-080	C-CAP,U, 0.1-25F		C304	87-010-759-080		C-CAP,U, 0.1-25F
C2	87-010-263-080	CAP, ELECT 100-10V		C305	87-A10-915-080		C-CAP,U 1000P-25 J CH
C3	87-A10-915-080	C-CAP,U 1000P-25 J CH		C401	87-012-195-080		C-CAP,U 100P-50CH
C4	87-010-759-080	C-CAP,U, 0.1-25F		C402	87-012-195-080		C-CAP,U 100P-50CH
C5	87-010-263-080	CAP, ELECT 100-10V		C403	87-012-195-080		C-CAP,U 100P-50CH
C6	87-010-405-080	CAP, ELECT 10-50V		C404	87-012-195-080		C-CAP,U 100P-50CH
C101	87-A10-504-080	C-CAP,U 0.047-16 K B		C405	87-012-195-080		C-CAP,U 100P-50CH
C102	87-010-759-080	C-CAP,U, 0.1-25F		CN1	87-A60-429-010		CONN,16P H TOC-A
C103	87-012-195-080	C-CAP,U 100P-50CH		CN202	87-A60-130-010		CONN,5P V FE
C104	87-012-282-080	CAP, U 4700P-50		CN301	87-A60-154-010		CONN,6P H FE
C105	87-010-759-080	C-CAP,U, 0.1-25F		CN401	87-099-201-010		CONN,8P 6216 H
C106	87-010-263-080	CAP, ELECT 100-10V		CNA203	84-ZG1-648-010		CONN ASSY,6P
C107	87-010-263-040	CAP,E 100-10		L101	87-005-469-080		COIL 4.7UH FLR50
C108	87-010-759-080	C-CAP,U, 0.1-25F		M201	87-045-305-010		MOTOR, RF-500TB DC-5V (2MA)
C109	87-010-263-040	CAP,E 100-10		R104	87-012-278-080		C-CAP,U 2200P-50 B
C110	87-010-405-040	CAP,E 10-50		R106	87-012-274-080		CHIP CAP,U 1000P-50B
C111	87-010-401-080	CAP, ELECT 1-50V		S401	87-036-109-010		PUSH SWITCH
C114	87-012-188-080	C-CAP,U 47P-50 CH		S402	87-036-109-010		PUSH SWITCH
C115	87-010-759-080	C-CAP,U, 0.1-25F		W1	8B-ZG2-601-010		FF-CABLE,16P 1.0 115MM
C116	87-010-263-040	CAP,E 100-10		W2	8B-ZG2-602-010		FF-CABLE,5P 1.25 185MM
C117	87-010-263-080	CAP, ELECT 100-10V		X101	87-A70-318-010		VIB,XTAL 33.8688MHZ CSA-309
C118	87-010-759-080	C-CAP,U, 0.1-25F		T-T C.B			
C121	87-010-263-080	CAP, ELECT 100-10V		C401	87-A11-148-080		CAP,TC U 0.1-50 Z F
C122	87-010-759-080	C-CAP,U, 0.1-25F		CN401	87-A60-082-010		CONN,05P H 9604S-05F
C123	87-012-169-080	C-CAP,U 7P-50 CH		M401	87-A91-982-010		MOT,M25E-4 2054
C124	87-012-172-080	CAPACITOR CHIP U 10P CH		PS401	87-A90-156-010		SNSR,SG-240
C126	87-010-403-080	CAP, ELECT 3.3-50V		MOTOR C.B			
C127	87-010-759-080	C-CAP,U, 0.1-25F		M2	9X-262-513-210		SLED MOTOR
C128	87-A10-504-080	C-CAP,U 0.047-16 K B		PIN3	91-564-722-110		CONNECTOR 6P
C129	87-010-403-040	CAP,E 3.3-50 SME		SW1	91-572-085-110		LEAF SW
C130	87-010-759-080	C-CAP,U, 0.1-25F					
C131	87-010-759-080	C-CAP,U, 0.1-25F					
C132	87-010-263-040	CAP,E 100-10					
C133	87-010-405-080	CAP, ELECT 10-50V					
C134	87-010-759-080	C-CAP,U, 0.1-25F					

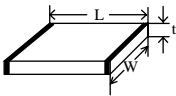
ELECTRICAL MAIN PARTS LIST-2/2

- Regarding connectors, they are not stocked as they are not the initial order items.
The connectors are available after they are supplied from connector manufacturers upon the order is received.

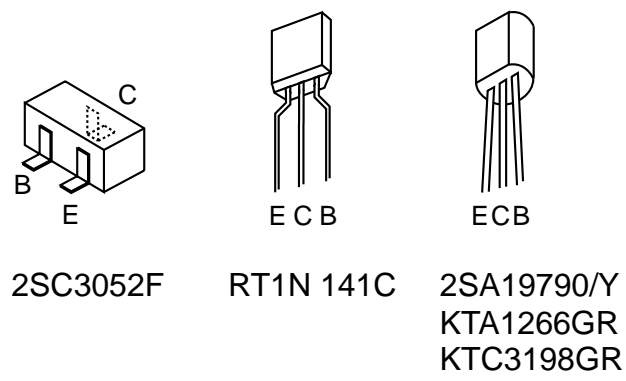
○チップ抵抗部品コード／CHIP RESISTOR PART CODE

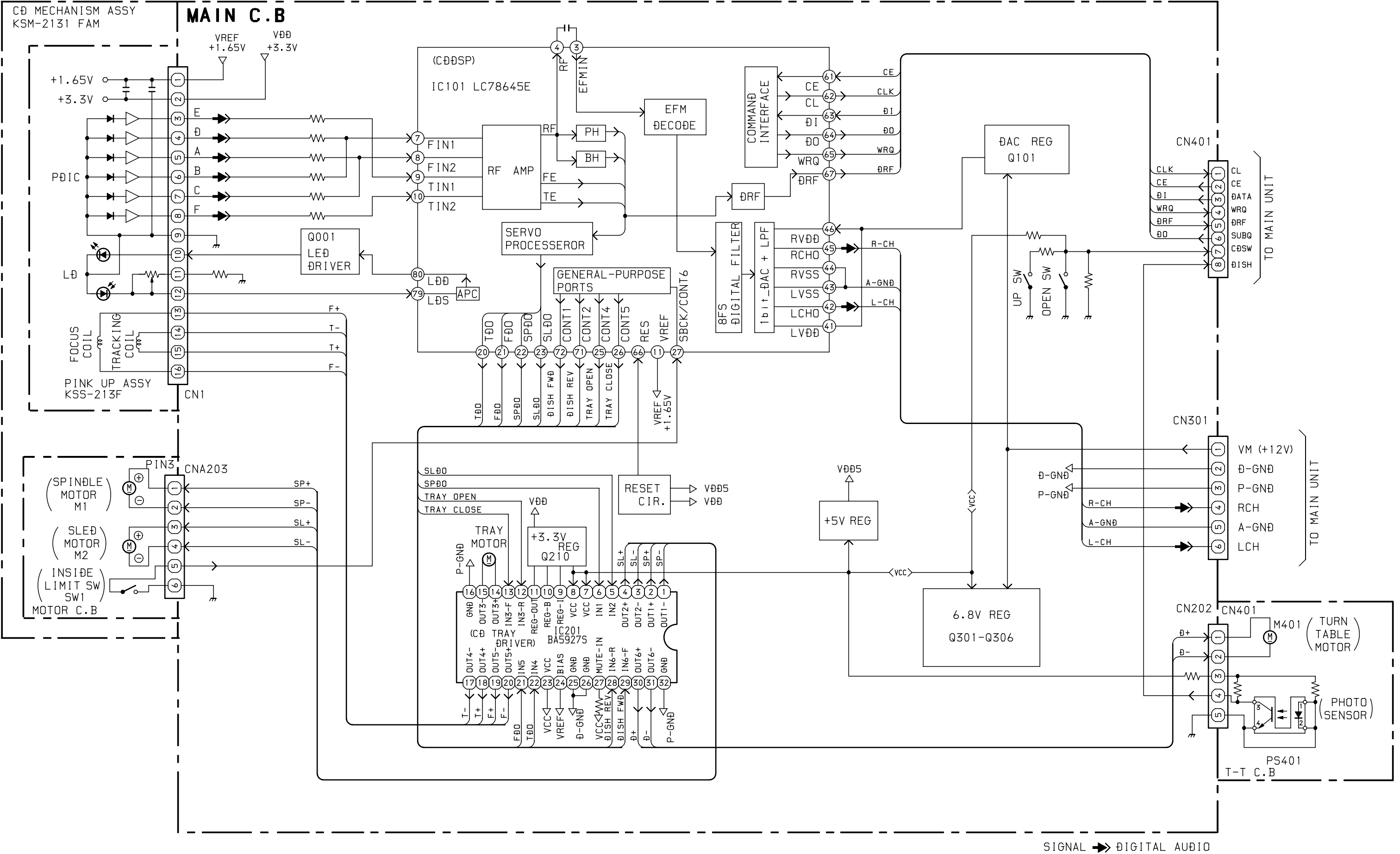


チップ抵抗
Chip resistor

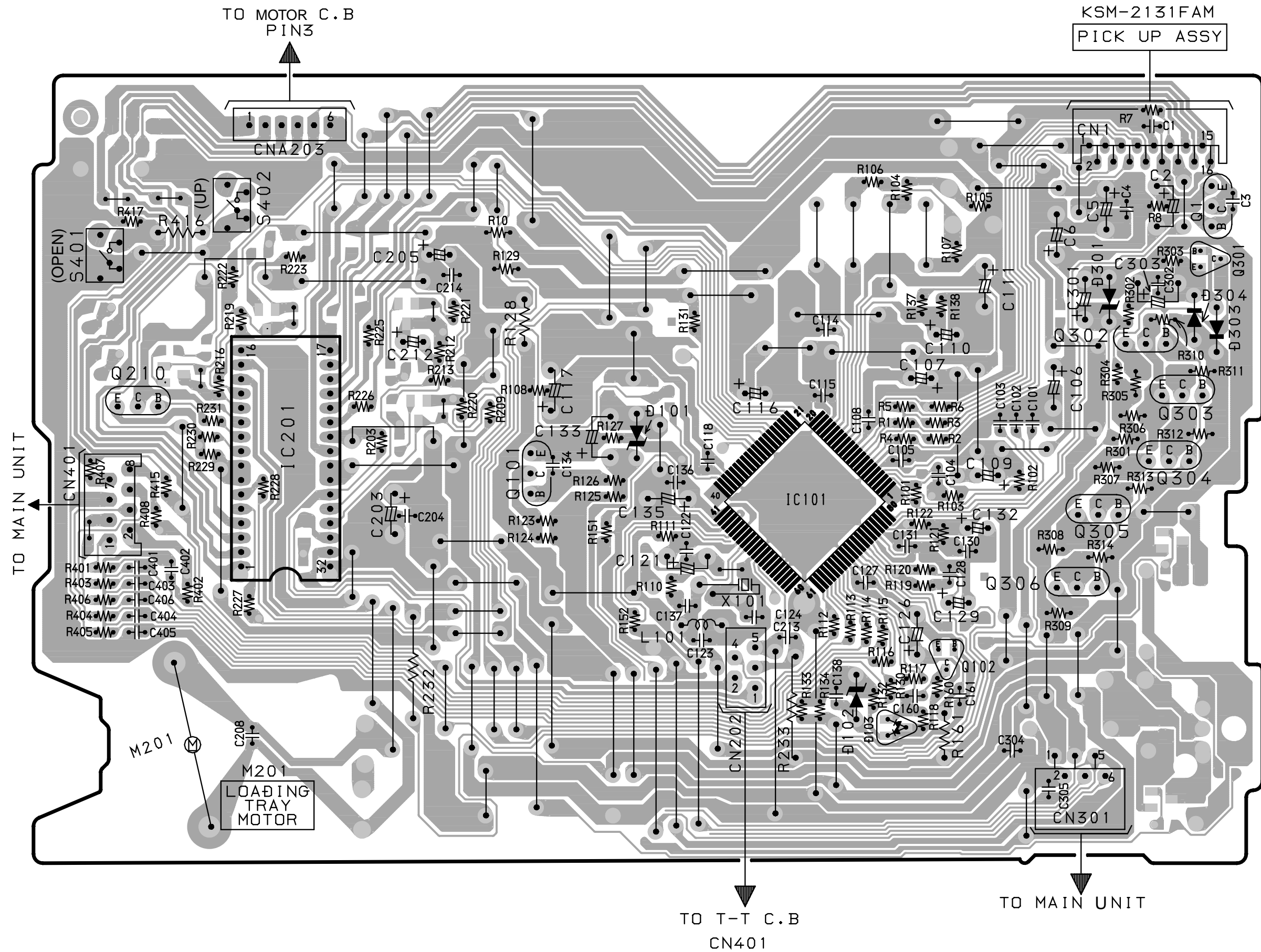
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A
				外形／Form	L	W	t	Resistor Code : A
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

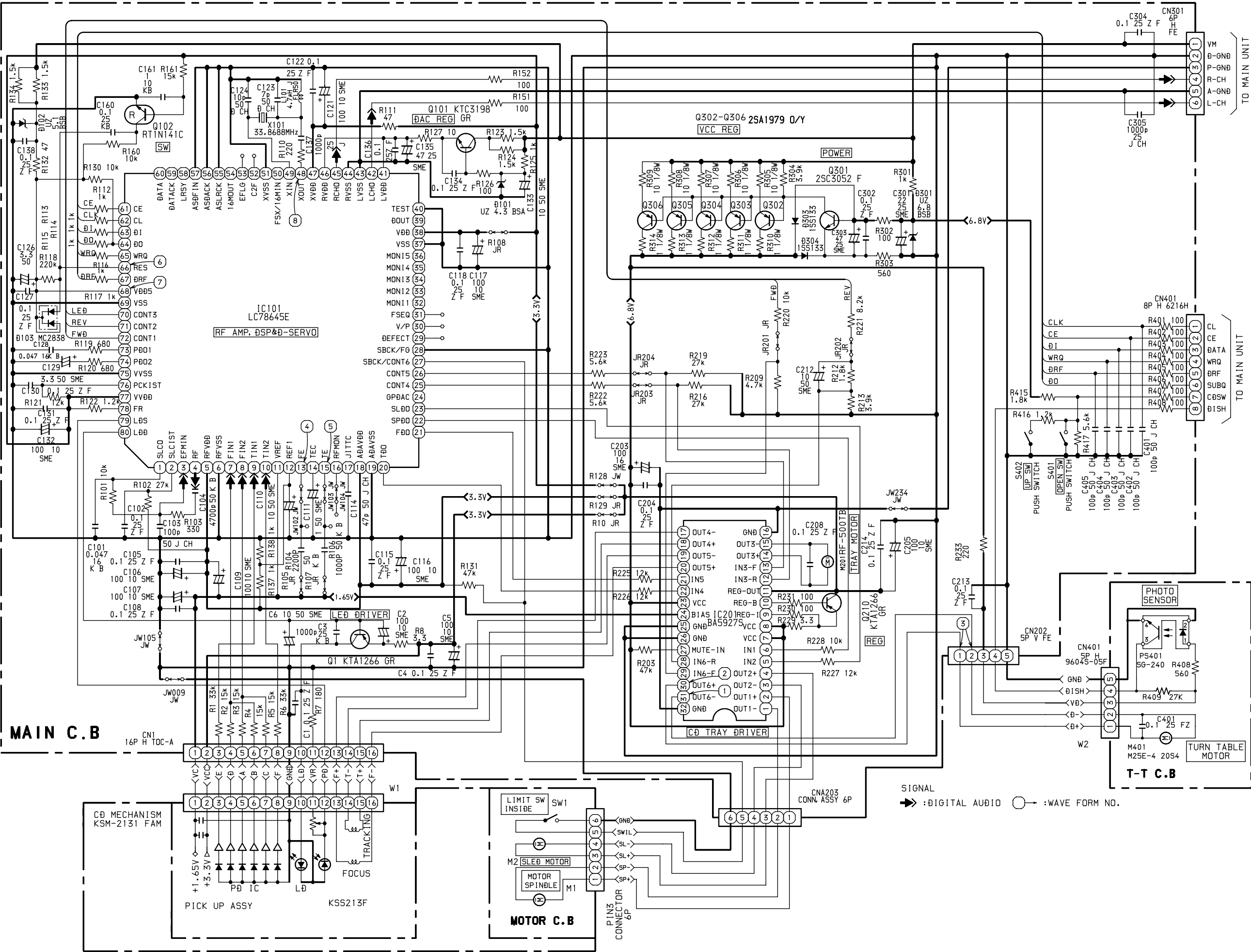
TRANSISTOR ILLUSTRATION-1/1





MAIN C.B

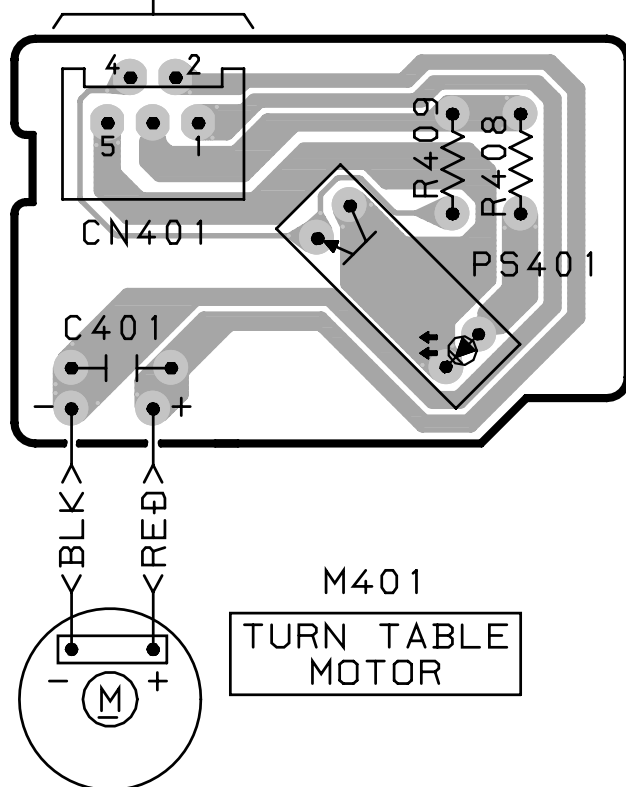




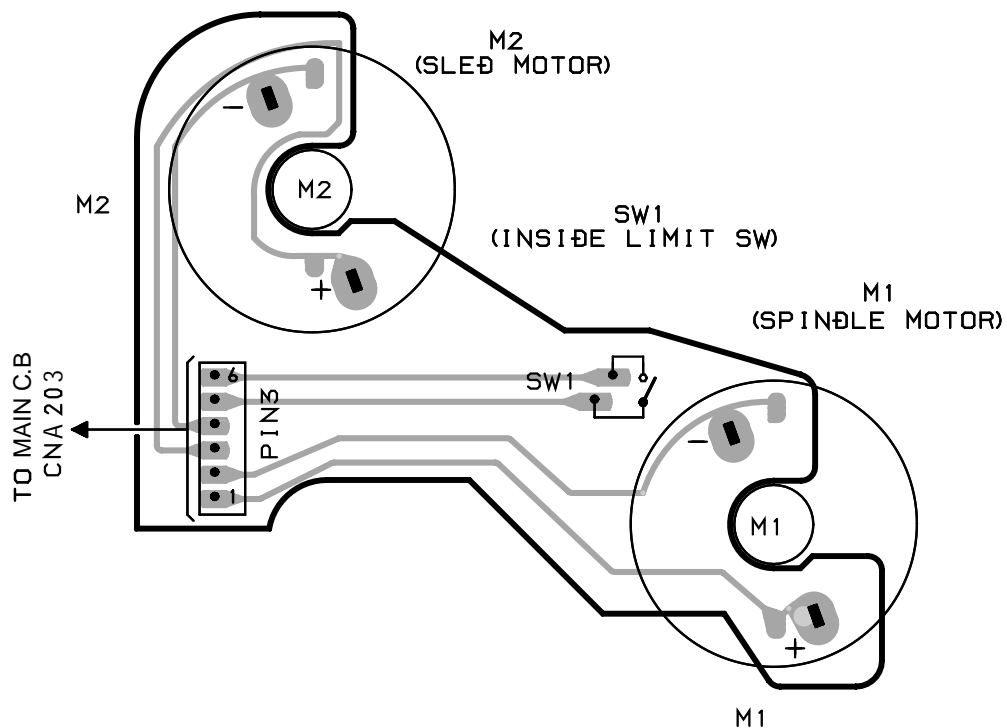
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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TO MAIN C.B
CN202

T-T C.B



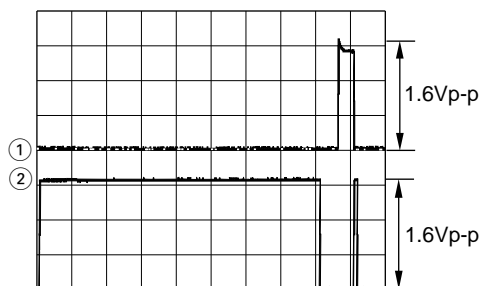
MOTOR C.B



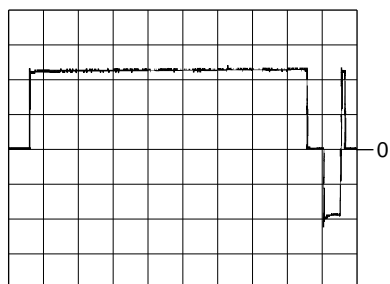
WAVE FORM-1/1

- ① IC201 ③① (OUT6-) VOLT/DIV: 500mV
TIME/DIV: 200mS

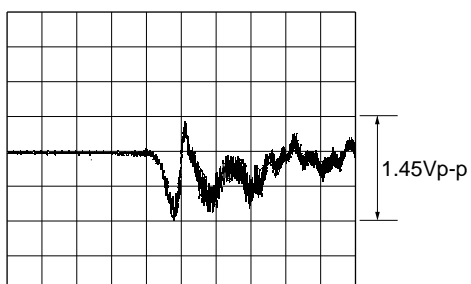
- ② IC201 ③② (OUT6+)



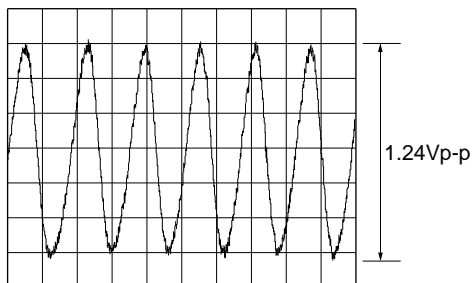
- ③ Between CN202 ① and ② (② Pin: 0 Level) VOLT/DIV: 1V
TIME/DIV: 200mS



- ④ IC101 ⑬ (FE) VOLT/DIV: 500mV
TIME/DIV: 5mS



- ⑤ IC101 ⑮ (TE) VOLT/DIV: 200mV
TIME/DIV: 200μS

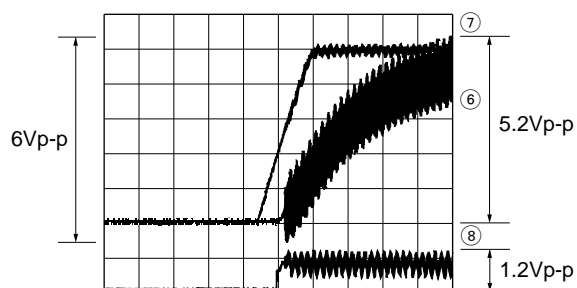


- ⑥ IC101 ⑥⑥ (RES) VOLT/DIV: 1V
TIME/DIV: 10mS

- ⑦ IC101 ⑥⑧ (VDD5)

- ⑧ IC101 ④⑧ (XOUT)

(POWER ON)

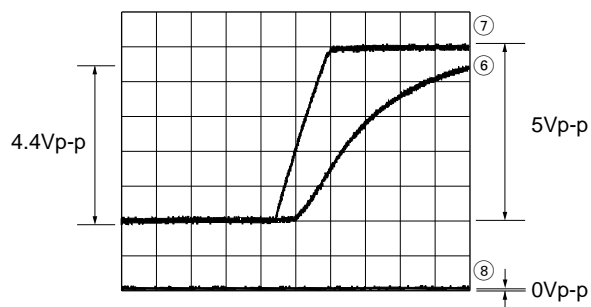


- ⑥ IC101 ⑥⑥ (RES) VOLT/DIV: 1V
TIME/DIV: 10mS

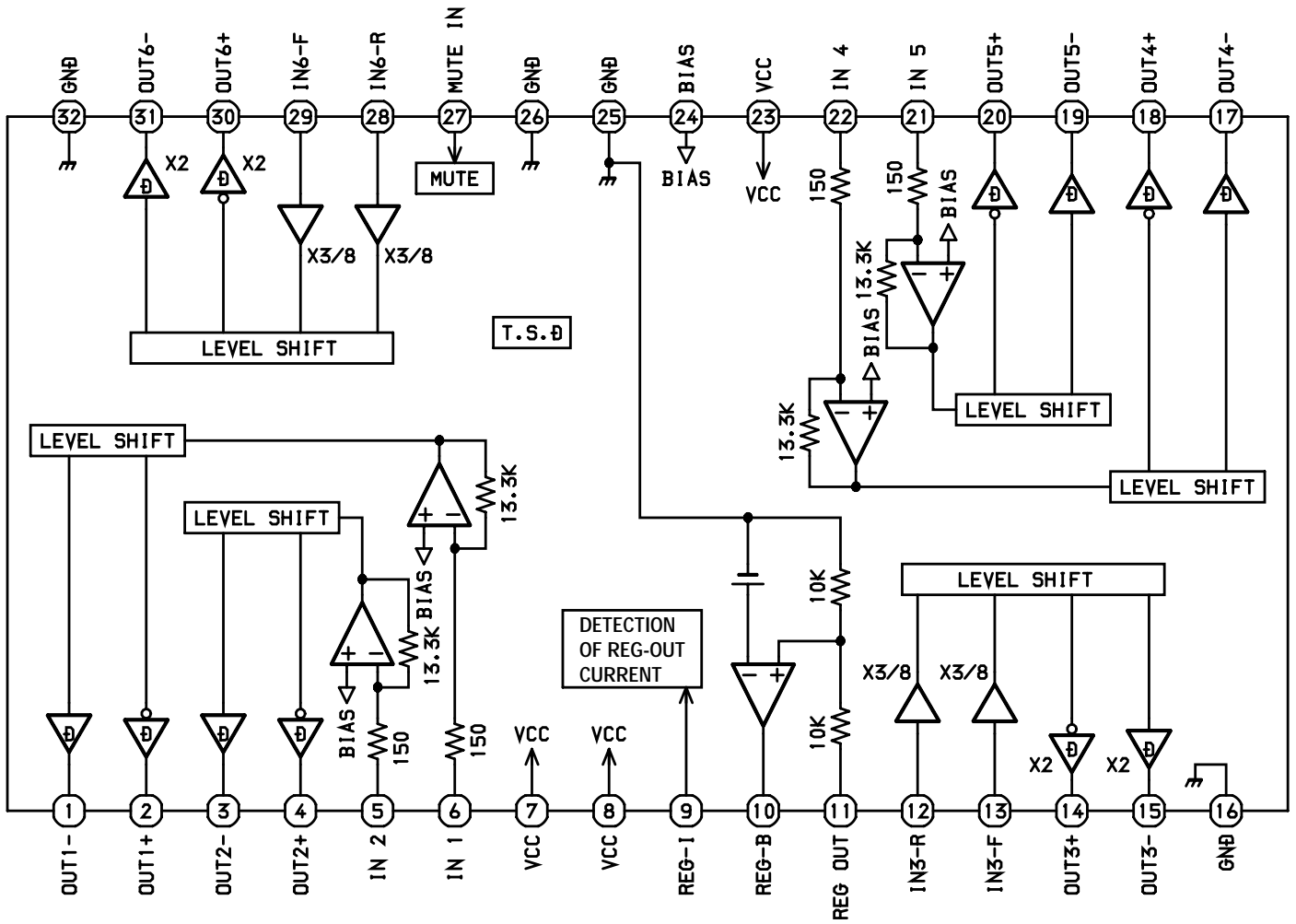
- ⑦ IC101 ⑥⑧ (VDD5)

- ⑧ IC101 ④⑧ (XOUT)

(POWER OFF)



IC BLOCK DIAGRAM-1/1
IC, BA5927S



IC DESCRIPTION-1/1 (LC78645)-1/3

Pin No.	Pin Name	I/O	Description	
1	SLCO	O	Slice level control	Control output.
2	SLCIST	I		SLCO output current adjustment resistor connection pin.
3	EFMIN	I		RF signal input pin.
4	RF	O	RF monitor pin.	
5	RFVDD	—	RF power supply pin.	
6	RFVSS	—	RF ground pin. Must be connected to 0V.	
7	FIN1	I	A+C signal input pin.	
8	FIN2	I	B+D signal input pin.	
9	TIN1	I	E signal input pin.	
10	TIN2	I	F signal input pin.	
11	VREF	O	VREF voltage output pin.	
12	REFI	I	Reference voltage output setting pin.	
13	EF	O	FE signal monitor pin.	
14	TEC	O	TE signal LPF capacitor connection pin.	
15	TE	O	TE signal monitor pin.	
16	RFMON	O	RF internal signal monitor pin.	
17	JITTC	O	Jitter detection capacitor connection pin.	
18	ADAVDD	—	Servo A/D, D/A supply pin.	
19	ADAVSS	—	Servo A/D, D/A ground pin. Must be connected to 0V.	
20	TDO	O	Tracking control output pin. D/A output.	
21	FDO	O	Focus control output pin. D/A output.	
22	SPDO	O	Spindle control output pin. D/A output.	
23	SLDO	O	Thread control output pin. D/A output.	
24	GPDAC	O	Servo D/A general-purpose output pin. (Not connected)	
25, 26	CONT4, 5	I/O	General-purpose input/output pin 4, 5.	Controlled by commands from the microprocessor. Any of these that are unused must be either set up as input pin ports and connected to 0V, or set up as output pin ports and left open.
27	SBCK/CONT6	I/O	General-purpose input/output pin 6, or subcode read clock input pin.	
28	SBCK/FG	I	Subcode read clock input pin/FG signal input pin/external emphasis setting pin. Set to command -pin function. Must be connected to 0V.	
29	DEFECTION	O	Defect pin. (Not connected)	
30	V/P	O	Rouge servo/phase control automatic switching monitor output pin. “H” for rough servo and “L” for phase servo. (Not connected)	
31	FSEQ	O	Synchronization signal detection output pin. Outputs a high level when the synchronization signal detected from the EFM signal and the internally generated synchronization signal agree. (Not connected)	
32-36	MONI1, 5	O	Internal signal monitor pin 1, 5. (Not connected)	
37	VSS	—	Digital ground pin. Must be connected to 0V.	
38	VDD	—	Digital power supply pin.	
39	DOUT	O	Digital OUT output pin. (Not connected)	
40	TEST	I	Test input pin. Must be connected to 0V.	

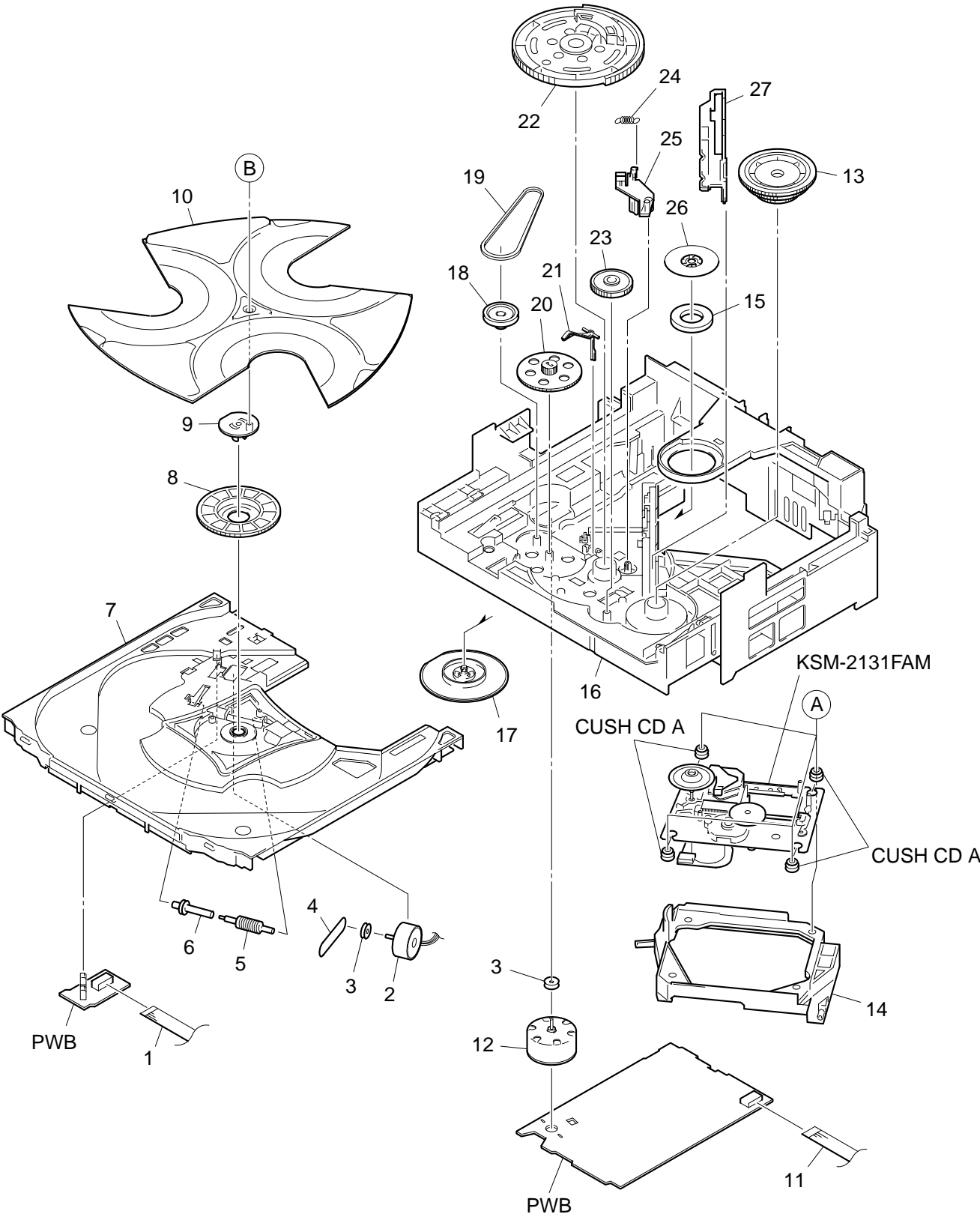
IC DESCRIPTION-1/1 (LC78645)-2/3

Pin No.	Pin Name	I/O	Description	
41	LVDD	—	L channel D/A converter	L channel power supply pin.
42	LCHO	O		L channel output pin.
43	LVSS	—		L channel ground pin. Must be connected to 0V.
44	RVSS	—	R channel D/A converter	R channel ground pin. Must be connected to 0V.
45	RCHO	O		R channel output pin.
46	RVDD	—		R channel power supply pin.
47	XVDD	—	Crystal oscillator	Crystal oscillator power supply pin.
48	XOUT	O		Connection for a 33.8688MHz crystal oscillator pin.
49	XIN	I		
50	FSX/16MIN	I/O	7.35kHz synchronization signal output pin. DF, DAC external clock input pin. (Not connected)	
51	XVSS	—	Crystal oscillator	Crystal oscillator ground pin. Must be connected to 0V.
52	C2F	O	C2 flag output pin. (Not connected)	
53	EFLG	O	C1, C2 error correction monitor pin. (Not connected)	
54	16MOUT	O	16.9344MHz output pin. (Not connected)	
55	ASLRCK	I	Antishock mode	L/R clock input pin. Must be connected to 0V when unused.
56	ASDACK	I		Bit clock input pin. Must be connected to 0V when unused.
57	ASDFIN	I		L/R channel data input pin. Must be connected to 0V when unused.
58	LRSY	O	Digital data output	L/R clock output pin. (Not connected)
59	DATAACK	O		Bit clock output pin. (Not connected)
60	DATA	O		L/R channel data output pin. (Not connected)
61	CE	I	Microprocessor interface	Chip enable signal input pin.
62	CL	I		Data transfer clock input pin.
63	DI	I		Data input pin.
64	DO	O		Data output pin. (Nch open drain output)
65	WRQ	O		Interruption signal output pin.
66	RES	I	Reset input pin. This pin must be set low briefly after power is first applied.	
67	DRF	O	Focus ON detect pin.	
68	VDD5	—	Microprocessor interface power supply pin.	
69	VSS	—	Digital ground pin. Must be connected to 0V.	
70	CONT3	I/O	General-purpose output pin 3. (Not connected)	Controlled by commands from the microprocessor . Must be set as an input pin and connected to 0V or set as an output pin and left open when unused.
71, 72	CONT2, 1	I/O	General-purpose output pin 2, 1.	

IC DESCRIPTION-1/1 (LC78645)-3/3

Pin No.	Pin Name	I/O	Description	
73, 74	PD01, 2	O	PLL	Phase comparison output pin 1, 2 to control built-in VCO.
75	VVSS	—		Built -in VCO GND pin. Must always be connected to 0V.
76	PCKIST	I		Resistor connection pin to set current for PD01 and 02 outputs.
77	VVDD	—		Built-in VCO power supply pin.
78	FR	I		Resistor connection pin to set the frequency range of built-in VCO.
79	LDS	I	Laser power detection signal input pin.	
80	LDD	O	Laser power control signal output pin.	

MECHANICAL EXPLODED VIEW-1/1



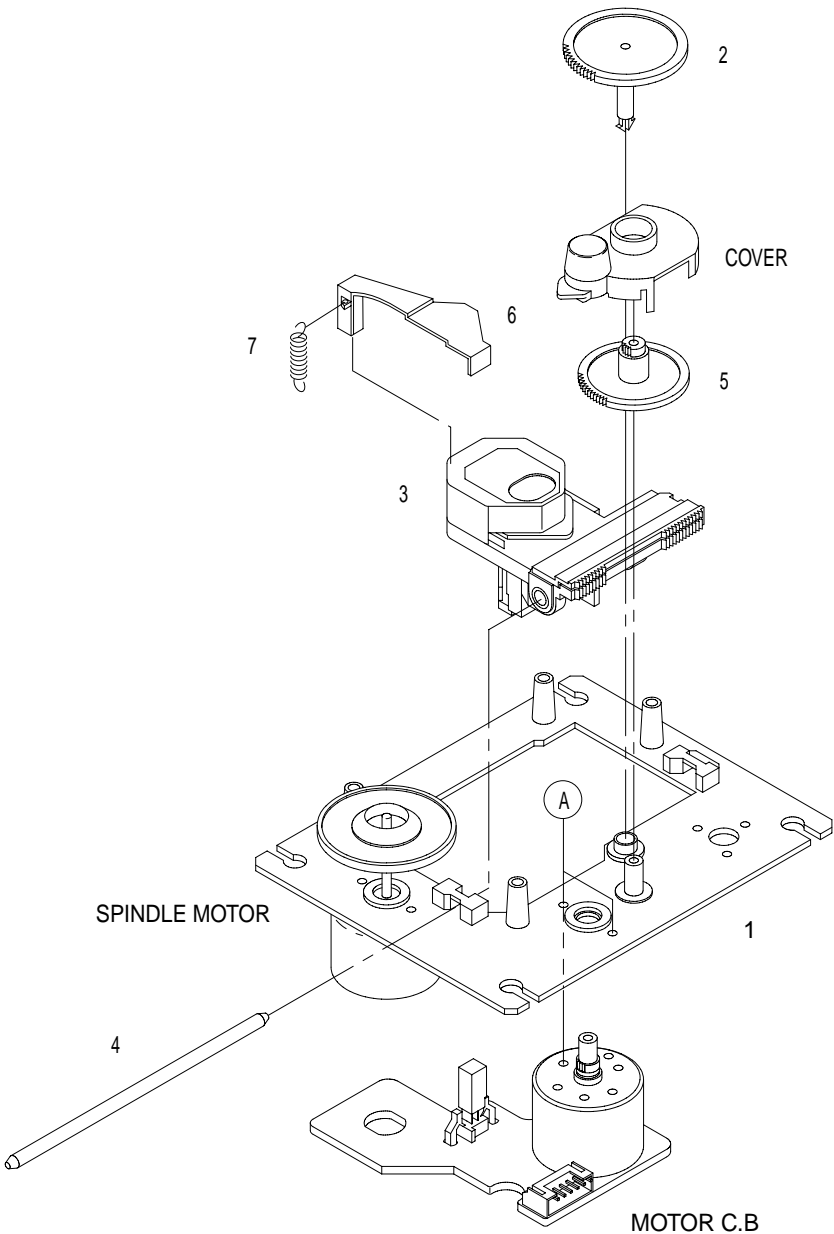
MECHANICAL PARTS LIST-1/1

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8B-ZG2-602-010		FF-CABLE,5P 1.25 185MM	15	8B-ZG2-601-010		FF-CABLE,16P 1.0 115MM<YZD4NCC>
2	87-A91-982-010		MOT,M25E-4 2054	16	8B-ZG2-201-010		CHAS,MECHA
3	84-ZG1-267-010		PULLEY,LOAD MO 8	17	84-ZG1-291-110		HLD, MAGNET 4 NAT
4	8B-ZG2-246-010		BELT,SQ 1-96.1	18	84-ZG1-271-010		PULLEY,RELAY 8
5	8B-ZG2-241-010		GEAR,WORM	19	84-ZG1-209-010		BELT,SQ1.8-117.7
6	8B-ZG2-236-010		PULLEY,WORM	20	84-ZG1-206-110		GEAR,RELAY
7	8B-ZG2-001-010		TRAY,2K	21	83-ZG3-213-010		LVR,SW
8	84-ZG1-269-010		GEAR,MAIN TT 4	22	8B-ZG2-221-010		GEAR,MAIN CAM
9	84-ZG1-288-010		LEVER,TT NAT	23	8B-ZG2-231-010		GEAR,TRAY RELAY
10	8B-ZG2-002-011		TURN TABLE,2K	24	84-ZG1-211-010		SPR-E CAM S
11	83-ZG3-604-010		RING,MAG 2	25	8B-ZG2-216-010		LEVER,CAM
12	87-045-305-010		MOTOR, RF-500TB DC-5V (2MA)	26	81-ZG1-255-110		PLATE,MAGNET MK2
13	8B-ZG2-226-010		GEAR,TRAY	27	8B-ZG2-211-010		PLATE,MECHA CAM
14	8B-ZG2-206-010		HLD,MECHA	A	81-ZG1-271-010		S-SCREW MECH REAR
15	8B-ZG2-601-010		FF-CABLE,16P 1.0 115MM<EXCEPT YZD4NCC>	B	87-B10-331-010		VF+3-6 BLK

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange	GM	Metallic Green
YM	Metallic Yellow	DM	Metallic Orange	PT	Transparent Pink
LA	Aqua Blue	GL	Light Green		

CD MECHANISM EXPLODED VIEW-1/1 (KSM-2131FAM)



CD MECHANISM PARTS LIST-1/1 (KSM-2131FAM)

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	9X-264-629-220		MOTOR CHASSIS ASSY (MB) (FR)
2	92-626-907-010		GEAR (A) (S)
3	87-A90-836-010		OPTICAL PICK UP KSS-213F
4	92-626-908-020		SHAFT SLED
5	92-627-003-010		GEAR (B)
6	92-646-697-020		LENS SHUTTER (F)
7	92-646-702-010		SPRIG EXTENSION
A	97-621-255-150		SCREW+P2-3



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